

# Hydric Soils

McLeod County, Minnesota

[This report lists only those map unit components that are rated as hydric. Dashes (---) in any column indicate that the data were not included in the database. Definitions of hydric criteria codes are included at the end of the report]

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
<b>27B:</b>					
Dickinson fine sandy loam, 1 to 6 percent slopes	Dickinson	90	Outwash plains	No	---
	Mayer	5	Flats	Yes	2B3
	Shandep	5	Depressions	Yes	2B3, 3
<b>35:</b>					
Blue Earth mucky silty clay loam	Blue Earth	95	Depressions, Relict lakebeds	Yes	2B3, 3
	Canisteo	5	Rims	Yes	2B3
<b>39A:</b>					
Wadena loam, 0 to 2 percent slopes	Wadena	90	Outwash plains	No	---
	Biscay	5	Drainageways	Yes	2B3
	Mayer	5	Flats	Yes	2B3
<b>39B:</b>					
Wadena loam, 2 to 6 percent slopes	Wadena	90	Outwash plains	No	---
	Biscay	4	Drainageways	Yes	2B3
	Estherville	3	Outwash plains	No	---
	Mayer	3	Flats	Yes	2B3
<b>41A:</b>					
Estherville loam, 0 to 2 percent slopes	Estherville	90	Outwash plains	No	---
	Biscay	5	Drainageways	Yes	2B3
	Wadena	5	Outwash plains	No	---
<b>41B:</b>					
Estherville loam, 2 to 6 percent slopes	Estherville	90	Outwash plains	No	---
	Biscay	4	Drainageways	Yes	2B3
	Hawick	3	Outwash plains	No	---
	Wadena	3	Outwash plains	No	---

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<b>86:</b>					
Canisteo clay loam	Canisteo	90	Depressions, Flats, Moraines, Rims	Yes	2B3
	Glencoe	4	Depressions	Yes	2B3, 3
	Crippin	3	Moraines	No	---
	Harps	3	Rims	Yes	2B3
<b>94B:</b>					
Terril loam, 2 to 6 percent slopes	Terril	90	Hills, Moraines	No	---
	Delft	4	Drainageways	Yes	2B3
	Nicollet	3	Moraines	No	---
	Webster	3	Drainageways	Yes	2B3
<b>102B:</b>					
Clarion loam, 2 to 6 percent slopes	Clarion	90	Hills, Moraines	No	---
	Nicollet	4	Moraines	No	---
	Swanlake	3	Moraines	No	---
	Webster	3	Drainageways	Yes	2B3
<b>106B:</b>					
Lester loam, 2 to 6 percent slopes	Lester	90	Hills, Moraines	No	---
	Cordova	4	Drainageways	Yes	2B3
	Delft	3	Drainageways	Yes	2B3
	Le Sueur	3	Moraines	No	---
<b>109:</b>					
Cordova clay loam	Cordova	90	Moraines, Swales	Yes	2B3
	Cokato	4	Moraines	No	---
	Hamel	3	Drainageways	Yes	2B3
	Le Sueur	3	Moraines	No	---

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112: Harps clay loam	Harps	90	Moraines, Rims	Yes	2B3
	Crippin	5	Moraines	No	---
	Glencoe	5	Depressions	Yes	2B3, 3
113: Webster clay loam	Webster	90	Flats, Moraines	Yes	2B3
	Glencoe	5	Depressions	Yes	2B3, 3
	Nicollet	5	Moraines	No	---
114: Glencoe clay loam	Glencoe	85	Depressions, Moraines	Yes	2B3, 3
	Canisteo	10	Rims	Yes	2B3
	Okoboji	5	Depressions	Yes	2B3, 3
118: Crippin loam	Crippin	90	Moraines, Rises	No	---
	Canisteo	4	Rims	Yes	2B3
	Swanlake	3	Moraines	No	---
	Webster	3	Drainageways	Yes	2B3
238B: Kilkenny clay loam, 2 to 6 percent slopes	Kilkenny	90	Hills, Moraines	No	---
	Cordova	4	Drainageways	Yes	2B3
	Le Sueur	3	Moraines	No	---
	Swanlake	3	Moraines	No	---

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239: Le Sueur loam	Le Sueur	90	Moraines, Rises	No	---
	Cordova	4	Drainageways	Yes	2B3
	Cokato	3	Moraines	No	---
	Crippin	3	Moraines	No	---
247: Linder loam	Linder	90	Outwash plains	No	---
	Biscay	4	Drainageways	Yes	2B3
	Estherville	3	Outwash plains	No	---
	Mayer	3	Flats	Yes	2B3
255: Mayer loam	Mayer	90	Flats, Outwash plains	Yes	2B3
	Biscay	4	Drainageways	Yes	2B3
	Canisteo	3	Rims	Yes	2B3
	Linder	3	Outwash plains	No	---
269: Millington clay loam, occasionally flooded	Millington, occasionally flooded	90	Flood plains	Yes	2B3
	Coland	5	Flood plains	Yes	2B3
	Mayer	5	Terraces	Yes	2B3
313: Spillville loam, occasionally flooded	Spillville, occasionally flooded	90	Flood plains	No	---
	Coland	4	Flood plains	Yes	2B3
	Millington	3	Flood plains	Yes	2B3
	Terril	3	Moraines	No	---

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<b>327B:</b>					
Dickman sandy loam, 1 to 6 percent slopes	Dickman	90	Outwash plains	No	---
	Dickinson	4	Outwash plains	No	---
	Mayer	3	Flats	Yes	2B3
	Shandep	3	Depressions	Yes	2B3, 3
<b>336:</b>					
Delft clay loam	Delft	90	Drainageways, Moraines	Yes	2B3
	Clarion	4	Moraines	No	---
	Crippin	3	Moraines	No	---
	Glencoe	3	Depressions	Yes	2B3, 3
<b>362:</b>					
Millington loam, frequently flooded	Millington, frequently flooded	90	Flood plains	Yes	2B3, 4
	Coland	5	Flood plains	Yes	2B3, 4
	Hanlon	5	Flood plains	No	---
<b>386:</b>					
Okoboji mucky silty clay loam	Okoboji	85	Depressions, Moraines	Yes	2B3, 3
	Canisteo	5	Rims	Yes	2B3
	Harps	5	Rims	Yes	2B3
	Klossner	5	Depressions	Yes	1, 3
<b>392:</b>					
Biscay clay loam	Biscay	90	Flats, Outwash plains	Yes	2B3
	Linder	4	Outwash plains	No	---
	Mayer	3	Flats	Yes	2B3
	Shandep	3	Depressions	Yes	2B3, 3

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414: Hamel loam	Hamel	90	Drainageways, Moraines	Yes	2B3
	Glencoe	5	Depressions	Yes	2B3, 3
	Terril	5	Moraines	No	---
517: Shandep clay loam	Shandep	85	Depressions, Outwash plains	Yes	2B3, 3
	Glencoe	10	Depressions	Yes	2B3, 3
	Mayer	5	Flats	Yes	2B3
525: Muskego muck	Muskego	85	Depressions, Moraines	Yes	1, 3
	Canisteo	10	Rims	Yes	2B3
	Klossner	5	Depressions	Yes	1, 3
539: Klossner muck	Klossner	85	Depressions, Moraines	Yes	1, 3
	Canisteo	10	Rims	Yes	2B3
	Glencoe	5	Depressions	Yes	2B3, 3
611C: Hawick coarse sandy loam, 4 to 12 percent slopes	Hawick	90	Outwash plains	No	---
	Biscay	4	Drainageways	Yes	2B3
	Clarion	3	Moraines	No	---
	Wadena	3	Outwash plains	No	---

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
<b>887B:</b>					
Clarion-Swanlake complex, 2 to 6 percent slopes	Clarion	60	Hills, Moraines	No	---
	Swanlake	25	Hills, Moraines	No	---
	Crippin	5	Moraines	No	---
	Glencoe	5	Depressions	Yes	2B3, 3
	Webster	5	Drainageways	Yes	2B3
<b>920B:</b>					
Clarion-Estherville complex, 2 to 6 percent slopes	Clarion	70	Hills, Moraines	No	---
	Estherville	20	Hills, Moraines	No	---
	Swanlake	5	Moraines	No	---
	Webster	5	Drainageways	Yes	2B3
<b>920C2:</b>					
Clarion-Storden-Estherville complex, 6 to 12 percent slopes, eroded	Clarion, eroded	40	Hills, Moraines	No	---
	Storden, eroded	25	Hills, Moraines	No	---
	Estherville, eroded	20	Hills, Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
	Swanlake	5	Moraines	No	---
	Webster	5	Drainageways	Yes	2B3
<b>920D2:</b>					
Clarion-Storden-Estherville complex, 12 to 18 percent slopes, eroded	Clarion, eroded	45	Hills, Moraines	No	---
	Storden, eroded	30	Hills, Moraines	No	---
	Estherville, eroded	15	Hills, Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
	Terril	5	Moraines	No	---

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<b>921C2:</b>					
Clarion-Storden complex, 6 to 12 percent slopes, eroded	Clarion, eroded	55	Hills, Moraines	No	---
	Storden, eroded	30	Hills, Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
	Swanlake	5	Moraines	No	---
	Webster	5	Drainageways	Yes	2B3
<b>944B:</b>					
Lester-Storden-Estherville complex, 2 to 6 percent slopes	Lester	50	Hills, Moraines	No	---
	Storden	25	Hills, Moraines	No	---
	Estherville	15	Hills, Moraines	No	---
	Cordova	5	Drainageways	Yes	2B3
	Hamel	5	Drainageways	Yes	2B3
<b>945B:</b>					
Lester-Storden complex, 2 to 6 percent slopes	Lester	60	Hills, Moraines	No	---
	Storden	25	Hills, Moraines	No	---
	Cordova	5	Drainageways	Yes	2B3
	Hamel	5	Drainageways	Yes	2B3
	Le Sueur	5	Moraines	No	---
<b>945C2:</b>					
Lester-Storden complex, 6 to 12 percent slopes, eroded	Lester, eroded	50	Hills, Moraines	No	---
	Storden, eroded	35	Hills, Moraines	No	---
	Hamel	10	Drainageways	Yes	2B3
	Cordova	5	Drainageways	Yes	2B3



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<b>956:</b>					
Canisteo-Glencoe complex	Canisteo	55	Depressions, Flats, Moraines, Rims	Yes	2B3
	Glencoe	30	Depressions, Moraines	Yes	2B3, 3
	Crippin	5	Moraines	No	---
	Harps	5	Rims	Yes	2B3
	Okoboji	5	Depressions	Yes	2B3, 3
<b>960D2:</b>					
Storden-Clarion complex, 12 to 18 percent slopes, eroded	Storden, eroded	45	Hills, Moraines	No	---
	Clarion, eroded	40	Hills, Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
	Swanlake	5	Moraines	No	---
	Terril	5	Moraines	No	---
<b>960F:</b>					
Storden-Clarion complex, 18 to 40 percent slopes	Storden	45	Hills, Moraines	No	---
	Clarion	40	Hills, Moraines	No	---
	Terril	10	Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
<b>978:</b>					
Cordova-Rolfe complex	Cordova	60	Flats, Moraines	Yes	2B3
	Rolfe	30	Depressions, Moraines	Yes	2B3, 3
	Okoboji	5	Depressions	Yes	2B3, 3
	Webster	5	Drainageways	Yes	2B3
<b>1016:</b>					
Udorthents, loamy	Udorthents, loamy	100	Moraines	No	---

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
1030: Udorthents-Pits, gravel complex	Udorthents	50	Outwash plains	No	---
	Pits, gravel	40	Outwash plains		---
1075: Klossner-Muskego complex, ponded	Klossner, ponded	45	Depressions, Moraines	Yes	1, 3
	Muskego, ponded	40	Depressions, Moraines	Yes	1, 3
	Okoboji	10	Depressions	Yes	2B3, 3
	Canisteo	5	Rims	Yes	2B3
1080: Klossner-Okoboji-Glencoe complex, ponded	Klossner, ponded	35	Depressions, Moraines	Yes	1, 3
	Okoboji, ponded	30	Depressions, Moraines	Yes	2B3, 3
	Glencoe, ponded	25	Depressions, Moraines	Yes	2B3, 3
	Canisteo	5	Rims	Yes	2B3
	Shandep	5	Depressions	Yes	2B3, 3
1084: Hanlon-Kalmarville complex, frequently flooded	Hanlon, frequently flooded	50	Flood plains	Yes	4
	Kalmarville, frequently flooded	40	Flood plains	Yes	2B3, 4
	Coland	5	Flood plains	Yes	2B3, 4
	Millington	5	Flood plains	Yes	2B3, 4
1091: Klossner, sandy substratum-Harps-Mayer complex	Klossner, sandy substratum	40	Depressions, Moraines	Yes	1, 3
	Harps	30	Moraines, Rims	Yes	2B3
	Mayer	20	Flats, Moraines	Yes	2B3
	Canisteo	5	Rims	Yes	2B3
	Linder	5	Outwash plains	No	---

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
1092: Harps-Glencoe complex	Harps	50	Moraines, Rims	Yes	2B3
	Glencoe	35	Depressions, Moraines	Yes	2B3, 3
	Canisteo	10	Rims	Yes	2B3
	Okoboji	5	Depressions	Yes	2B3, 3
1095: Zook silty clay loam, frequently flooded	Zook, frequently flooded	90	Flood plains	Yes	2B3, 4
	Coland	10	Flood plains	Yes	2B3, 4
1204B: Cokato loam, 2 to 6 percent slopes	Cokato	90	Hills, Moraines	No	---
	Cordova	4	Drainageways	Yes	2B3
	Delft	3	Drainageways	Yes	2B3
	Le Sueur	3	Moraines	No	---
1207B: Cokato-Le Sueur complex, 1 to 6 percent slopes	Cokato	45	Hills	No	---
	Le Sueur	40	Moraines, Rises	No	---
	Canisteo	5	Rims	Yes	2B3
	Cordova	5	Drainageways	Yes	2B3
	Swanlake	5	Moraines	No	---
1213B: Cokato-Storden complex, 2 to 6 percent slopes	Cokato	55	Hills, Moraines	No	---
	Storden	30	Hills, Moraines	No	---
	Cordova	5	Drainageways	Yes	2B3
	Hamel	5	Drainageways	Yes	2B3
	Swanlake	5	Moraines	No	---

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
<b>1213C:</b>					
Cokato-Storden complex, 6 to 12 percent slopes, eroded	Cokato, eroded	50	Hills, Moraines	No	---
	Storden, eroded	40	Hills, Moraines	No	---
	Hamel	5	Drainageways	Yes	2B3
	Kilkenny	5	Moraines	No	---
<b>1228:</b>					
Hoopeston-Le Sueur complex	Hoopeston	60	Terraces	No	---
	Le Sueur	30	Moraines, Rises	No	---
	Biscay	5	Drainageways	Yes	2B3
	Estherville	5	Outwash plains	No	---
<b>1229B:</b>					
Cokato-Storden-Estherville complex, 2 to 6 percent slopes	Cokato	45	Hills, Moraines	No	---
	Storden	25	Hills, Moraines	No	---
	Estherville	20	Hills, Moraines	No	---
	Cordova	5	Drainageways	Yes	2B3
	Le Sueur	3	Moraines	No	---
<b>1833:</b>					
Coland clay loam, occasionally flooded	Coland, occasionally flooded	90	Flood plains	Yes	2B3
	Hanlon	4	Flood plains	No	---
	Millington	3	Flood plains	Yes	2B3
	Zook	3	Flood plains	No	---

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
<b>1834:</b>					
Coland clay loam, frequently flooded	Coland, frequently flooded	90	Flood plains	Yes	2B3, 4
	Hanlon	4	Flood plains	No	---
	Kalmarville	3	Flood plains	Yes	2B3, 4
	Millington	3	Flood plains	Yes	2B3, 4
<b>1901B:</b>					
Lester-Le Sueur complex, 1 to 6 percent slopes	Lester	45	Hills, Moraines	No	---
	Le Sueur	40	Moraines, Rises	No	---
	Canisteo	5	Rims	Yes	2B3
	Cordova	5	Drainageways	Yes	2B3
	Swanlake	5	Moraines	No	---
<b>L13A:</b>					
Klossner muck, depressional, 0 to 1 percent slopes	Klossner, drained	80	Depressions, Moraines	Yes	1
	Mineral soil, drained	15	Depressions, Moraines	Yes	2B3
	Houghton, drained	5	Depressions, Moraines	Yes	1
<b>L34A:</b>					
Cosmos silty clay, 0 to 2 percent slopes	Cosmos	85	Flats, Moraines, Swales	Yes	2B3
	Corvuso	5	Depressions, Flats, Moraines, Rims	Yes	2B3
	Kandiyohi	5	Flats, Moraines, Rises	No	---
	Lura, firm substratum, depressional	5	Depressions, Moraines	Yes	2B3

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
L83A: Webster clay loam, 0 to 2 percent slopes	Webster	65	Flats, Moraines, Swales	Yes	2B3
	Glencoe, depressional	14	Depressions, Moraines	Yes	2B3, 3
	Canisteo	8	Depressions, Flats, Moraines, Rims	Yes	2B3
	Nicollet	8	Flats, Moraines, Rises	No	---
	Poorly drained soil	5	Flats, Moraines, Swales	Yes	2B3
L84A: Glencoe clay loam, depressional, 0 to 1 percent slopes	Glencoe, depressional	80	Depressions, Moraines	Yes	2B3, 3
	Very poorly drained muck	10	Depressions, Moraines	Yes	2B3
	Canisteo	5	Depressions, Flats, Moraines, Rims	Yes	2B3
	Harps	5	Depressions, Rims	Yes	2B3
L85A: Nicollet clay loam, 1 to 3 percent slopes	Nicollet	85	Flats, Moraines, Rises	No	---
	Clarion	10	Hills, Moraines	No	---
	Webster	5	Flats, Moraines, Swales	Yes	2B3
L107A: Canisteo-Glencoe, depressional complex, 0 to 2 percent slopes	Canisteo	50	Moraines, Rims	Yes	2B3
	Glencoe, depressional	35	Depressions, Moraines	Yes	2B3, 3
	Harps	9	Moraines, Rims	Yes	2B3
	Canisteo, depressional	3	Depressions, Moraines	Yes	2B3
	Crippin	3	Flats, Moraines, Rises	No	---

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Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
<b>L163A:</b>					
Okoboji silty clay loam, depressional, 0 to 1 percent slopes	Okoboji, depressional	92	Lake plains, Moraines	Yes	2B3
	Canisteo	2	Depressions, Flats, Moraines, Rims	Yes	2B3
	Harpster	2	Lake plains	Yes	2B3
	Knoke, depressional	2	Lake plains	Yes	2B3
	Prinsburg	2	Depressions, Flats, Lake plains, Moraines, Rims	Yes	2B3
<b>L184A:</b>					
Corvuso silty clay loam, 0 to 2 percent slopes	Corvuso	85	Depressions, Flats, Moraines, Rims	Yes	2B3
	Lura, firm substratum, depressional	10	Depressions, Moraines	Yes	2B3
	Cosmos	5	Flats, Moraines, Swales	Yes	2B3
<b>L185B:</b>					
Strout-Arkton complex, 2 to 6 percent slopes	Strout	70	Hills, Moraines	No	---
	Arkton	20	Hills, Moraines	No	---
	Cosmos	5	Flats, Moraines, Swales	Yes	2B3
	Kandiyohi	5	Hills, Moraines	No	---
<b>L200A:</b>					
Klossner muck, firm substratum, depressional, 0 to 1 percent slopes	Klossner, drained, firm substratum	80	Depressions, Moraines	Yes	1
	Lura, drained, firm substratum	15	Depressions, Moraines	Yes	2B3
	Corvuso	5	Depressions, Flats, Moraines, Rims	Yes	2B3

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L205A:					
Blue Earth mucky silty clay loam, depressional, firm substratum, 0 to 1 percent slopes	Blue Earth, drained, firm substratum	95	Depressions, Moraines	Yes	2B3
	Corvuso	5	Depressions, Flats, Moraines, Rims	Yes	2B3
M-W:					
Water, miscellaneous	Water, miscellaneous	100	---		---
W:					
Water	Water	100	---	Unranked	---



## Hydric Soils

This table lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2003) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 2002).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
  - A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
  - B. are poorly drained or very poorly drained and have either:
    - 1) a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
    - 2) a water table at a depth of 0.5 foot or less during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
    - 3) a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

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